

**Concurrence Point 2A
Bridging Decisions and Alignment Review**

TIP Project No. U-5811
WBS 44384.1.1

SR 1002 (Aviation Parkway) Widening
From NC 54 to I-40
Wake County



May 2019

Purpose of Today's Meeting:

The purpose of this meeting is to discuss Concurrence Point 2A, determining bridging decisions and reviewing the alignment

1. Introduction and Project Overview

1.1 Meeting Purpose

The North Carolina Department of Transportation (NCDOT) proposes to widen SR 1002 (Aviation Parkway) from NC 54 to I-40 in Wake County. The proposed project is included in the NCDOT 2018-2027 State Transportation Improvement Program (STIP) as Project U-5811.

In accordance with the National Environmental Policy Act (NEPA)/Section 404 Merger Process, NCDOT is seeking consensus from the NEPA/404 Merger Team on CP 2A – Bridging Decisions and Alignment Review.

1.2 Project Description

Project U-5811 proposes to widen 2.4 miles of Aviation Parkway to a four-lane median-divided roadway with curb and gutter, including bicycle and pedestrian accommodations from NC 54 (Chapel Hill Road) in Morrisville to I-40 in Cary.

A locally administered project (U-5618) by the Town of Morrisville will widen Morrisville Carpenter Road from Davis Drive to the western North Carolina Railroad right of way, just west of NC 54. NCDOT Project I-5506 will modify the interchange of I-40 with Aviation Parkway, extending along Aviation Parkway to Gateway Centre Drive. Therefore, improvements as part of Project U-5811 are proposed to tie into the Morrisville Carpenter Road widening project just west of NC 54, and tie into the I-40 interchange project at Gateway Centre Drive.

Aviation Parkway is a major east-west route through the Town of Cary and the Town of Morrisville in Wake County. Aviation Parkway connects I-40 with downtown Morrisville, becoming Morrisville Carpenter Road west of NC 54. **Figure 1** shows the project vicinity, and **Figure 2A-C** shows the environmental and community features.

Aviation Parkway is a Minor Arterial that varies from two-lanes undivided to five-lanes undivided with a center left-turn lane at different points along the corridor. There is currently sidewalk along both sides of the road in the middle segment where businesses are located and near NC 54 where new neighborhoods have been built.

1.3 Schedule

- Public Meeting – May/June 2019
- C.P. 3 Meeting – July 2019
- Environmental Document – August 2019
- Right of Way Acquisition – FY 2020
- Construction – FY 2023

1.4 Merger Process History (Concurrence Points 1 and 2)

On March 22, 2018, the NEPA/404 Merger Team met to discuss Purpose and Need and Study Area (CP 1) and Detailed Study Alternatives (CP 2), for the referenced project. The Merger Team agreed to the following:

Purpose and Need

The primary purpose of this project is to reduce congestion on Aviation Parkway in order to improve the LOS in the design year (2040) peak hours along the corridor and at signalized intersections. A secondary benefit of this project is to improve east-west mobility through Morrisville and to I-40 and I-540/NC 540.

Study Area Defined

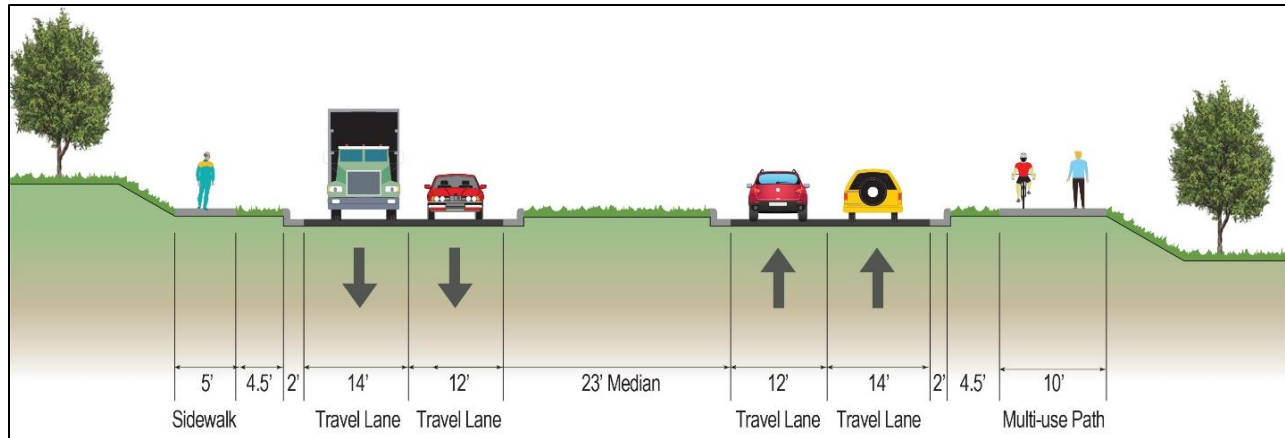
*The proposed study area is a 1,000-foot wide corridor, 500 feet on either side of the Aviation Parkway centerline, with a wider area around the NC 54 intersection, as shown on **Figure 1**.*

Detailed Study Alternatives Carried Forward

- *Build Alternative 1: Widen Aviation Parkway to a four-lane median divided best fit section with a 23-foot median and multimodal accommodations.*
- *No Build Alternative: Aviation Parkway would remain in its current condition.*

The proposed typical section for Aviation Parkway includes wide 14-foot outside lanes to accommodate bicycles, 12-foot inside lanes, a 23-foot median, a 5-foot sidewalk on the west side of the roadway, a 10-foot multi-use path on the east side of the roadway, and curb and gutter for approximately 1.4 miles. This can be seen in the figure below.

Proposed Aviation Parkway Typical Section

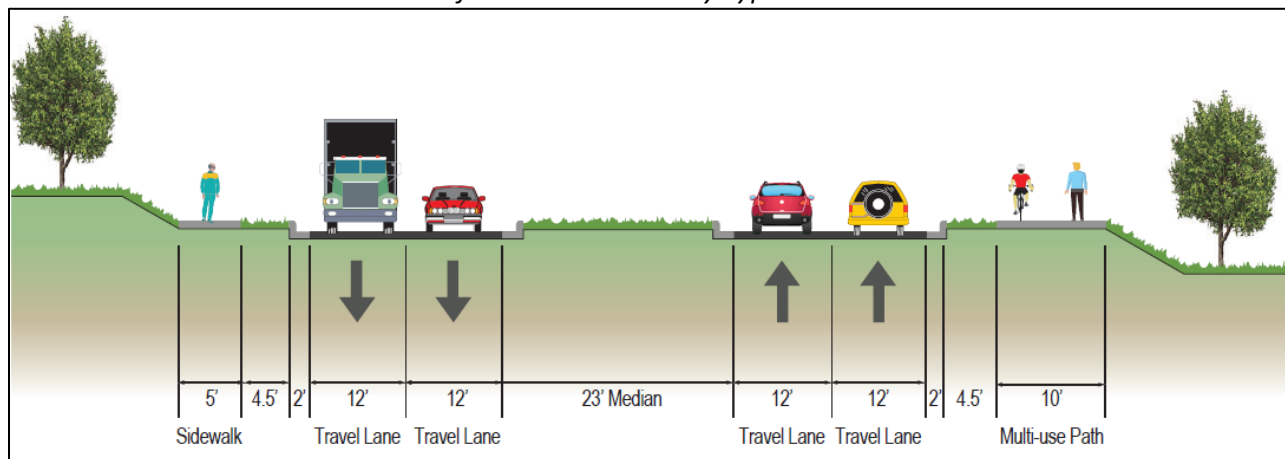


2. Design Updates

2.1 Typical Section

The typical section for Aviation Parkway has been modified to narrow the outside lanes from 14 feet to 12 feet, which is consistent with current NCDOT guidance for roads with a multi-use path.

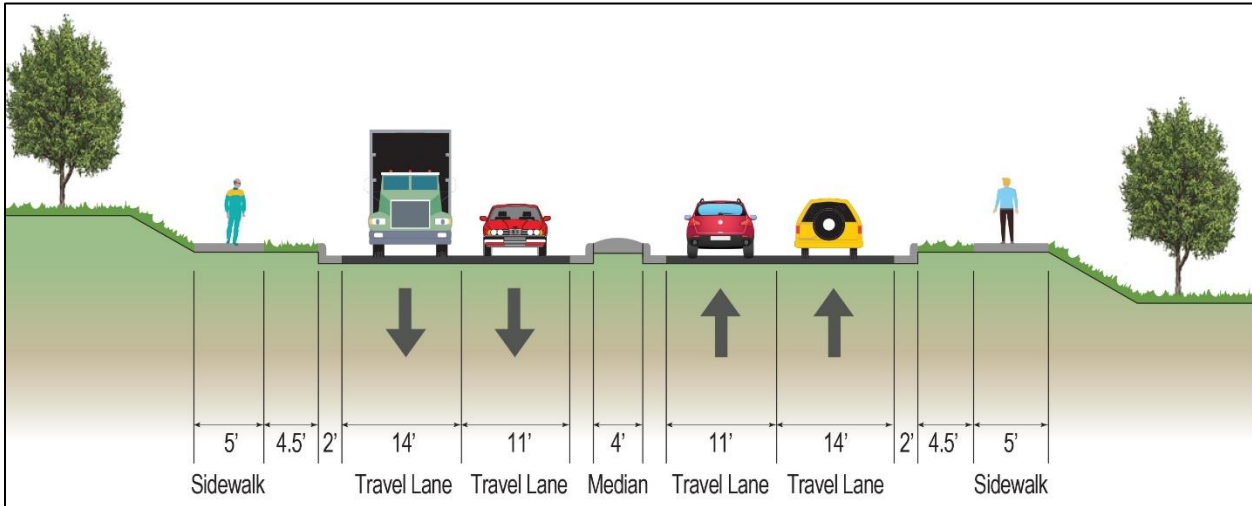
Modified Aviation Parkway Typical Section



2.2 NC 54/Railroad Crossing

The intersection of Aviation Parkway and NC 54 has undergone additional evaluation since CP 2. Due to the proximity of the railroad, NCDOT proposes to shift NC 54 approximately 20 feet to the east at the Aviation Parkway crossing to create a greater distance between the road and railroad. This typical section is included for approximately 0.2 miles and matches the typical section included in the Morrisville-Carpenter Road widening project.

Modified Aviation Parkway Typical Section Across NC 54 and the Railroad



In addition, trucks will be restricted from turning right across the railroad, the existing southbound right-turn slip lane will be removed, and all left turns will be restricted at the NC 54/Aviation Parkway intersection, instead redirected to a quadrant left loop. Two loop options were evaluated:

- **Option A** proposes to convert the existing intersection into a quadrant left intersection with the loop in the northeast quadrant of the intersection.
- **Option B** proposes to convert the existing intersection to a quadrant left intersection with the loop in the southeast quadrant of the intersection.

Both options would operate at LOS E by 2040 but have been carried forward for further analysis as interim solutions. It is assumed that a long-term solution will be studied as a separate project, which may include shifting and widening NC 54 and/or building a grade separation across the railroad. In the interim, restricting left turns at the NC 54/Aviation Parkway intersection improves safety and reduces lanes across the railroad.

2.3 Lake Crabtree Causeway

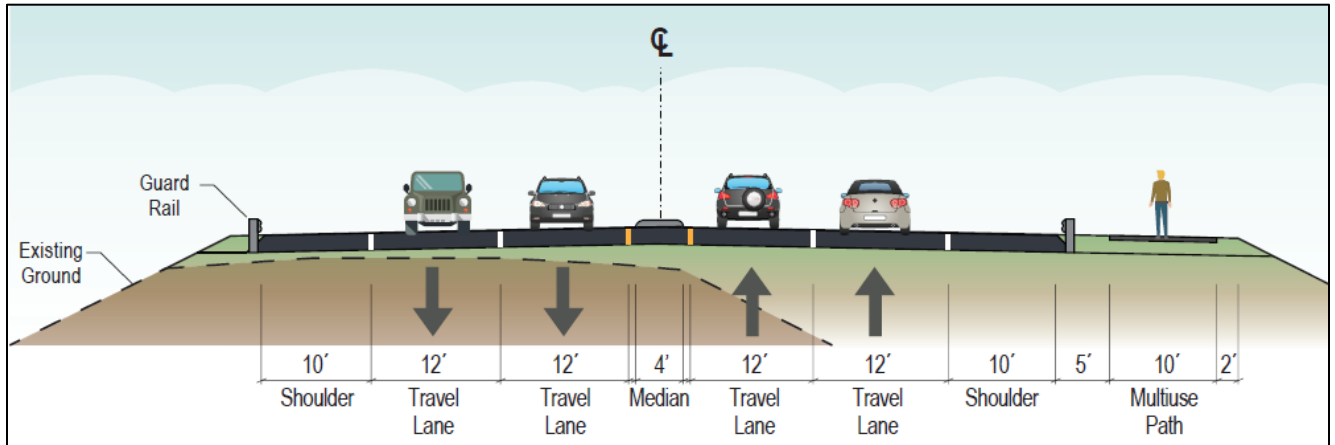
Lake Crabtree has a PCB fish tissue advisory and is listed on the 2016 Final 303(d) list as a poor benthic community. Additionally, it is a designated flood-control facility – any fill placed in Lake Crabtree will require compensatory flood storage mitigation within the flood pool at the same elevation that was filled.

NCDOT proposes a modified typical section across Lake Crabtree that would minimize the footprint while maintaining consistency with the Town of Cary’s master plan. The proposed typical section includes two 12-foot travel lanes with 10-foot paved shoulders on each side and a 4-foot concrete island for approximately 0.5 miles. Additionally, a five-foot planting strip and a 10-foot multi-use path is proposed on the south side.

This design also modifies the shoulder to address drainage across the causeway. This includes paving the full shoulder width to the guardrail, selecting a cross-slope to help the water drain more quickly away from

the lanes, and adding a vertical crest curve to reduce potential ponding. The revised typical section over the causeway is shown below.

Modified Aviation Parkway Typical Section Across Lake Crabtree Causeway



3. Concurrence Point 2A – Bridging Decisions and Alignment Review

Table 1 summarizes the proposed major drainage structures. In addition, the existing causeway across Lake Crabtree is recommended to be widened. Refer to **Figures 2A-2G** for proposed hydraulic structures.

Table 1. Proposed Major Drainage Structures

Site #	Stream ID #	Name	Existing Structure	Proposed Structure	Stream Classification	Intermittent / Perennial	Channel Width	Proposed Stream / Wetland / Open Water Impacts ^a	FEMA
1	SB	Morrisville Tributary	3-60" RCP, 60'	2 @ 8'x8' RCBC with 2' sill (buried 1'), 160'	C; NSW	Perennial	Varies from 5-8 ft	135 lf	Yes
1A ¹	SB	Morrisville Tributary	1-6' x 6.5' RCBC	2 @ 10'x7' RCBC (buried 1') with 2' sill in one barrel*, 39'	C; NSW	Perennial	Varies from 8-17 ft	115 lf	Yes
1B ¹	SB	Morrisville Tributary	N/A	2 @ 8'x8' RCBC (buried 1') with 2' sill in one barrel	C; NSW	Perennial	Varies from 8-10 ft	165 lf	Yes
1C ²	SB	Morrisville Tributary	N/A	2 @ 8'x8' RCBC (buried 1') with 2' sill	C; NSW	Perennial	Varies from 5-8 ft	310 lf	Yes
2	SD	Unnamed Tributary to Crabtree Creek	1-48" RCP, 48'	2 @ 72" RCPs (buried 1'), 144'	C; NSW	Perennial / Intermittent	Varies from 2-8 ft	140 lf	No
4	SP	Unnamed Tributary to Crabtree Creek	2-72" RCP, 65'	2 @ 8'x7' RCBC (buried 1'), 166'	C; NSW	Perennial	Varies from 6-13 ft ³	155 lf	No
5	Lake Crabtree	Stirrup Iron Creek	1 @ 15' x 14' RCBC, 79'	Extend outlet approx. 49 LF, 128'	B; NSW	Perennial	N/A	1.2 ac / 1.5 ac	Yes

¹ Only required in Option A (scour holes present upstream and downstream of site)

² Only required in Option B (includes 160 feet for the proposed culvert and 150 feet of stream channel realignment)

³ Scour hole present at outlet of existing culvert (approximately 35-ft wide)

^a Stream impacts are measured from openings of existing culvert to 25' beyond slope stakes. No wetland impacts are anticipated.

*Note that this is one of two options presented for Site 1A. This option is shown because there is no change to the existing roadway grade required. Alternate sizing with one grade increase would be 2 @ 8' x 8' RCBC (buried 1') with 2' sill in one barrel.

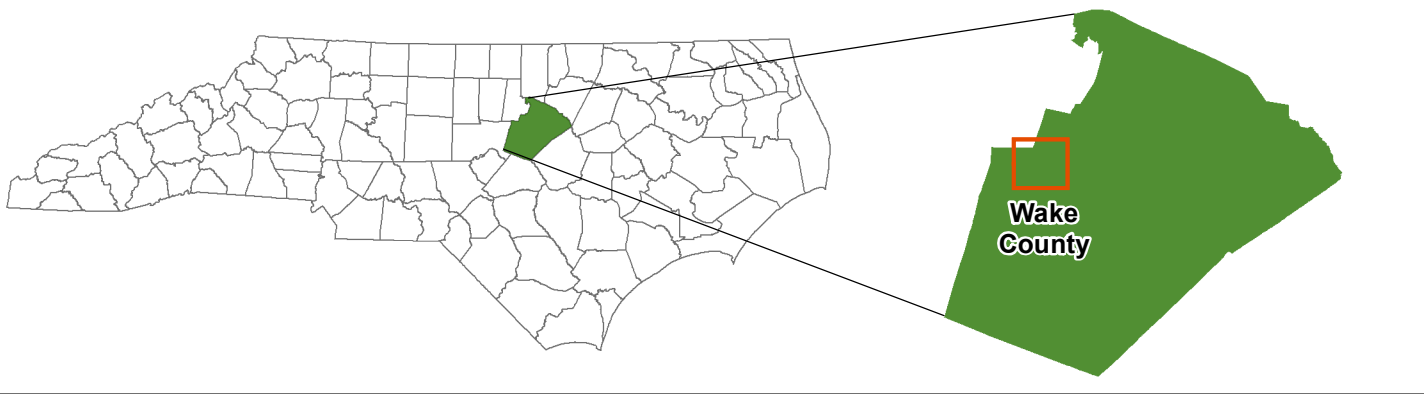
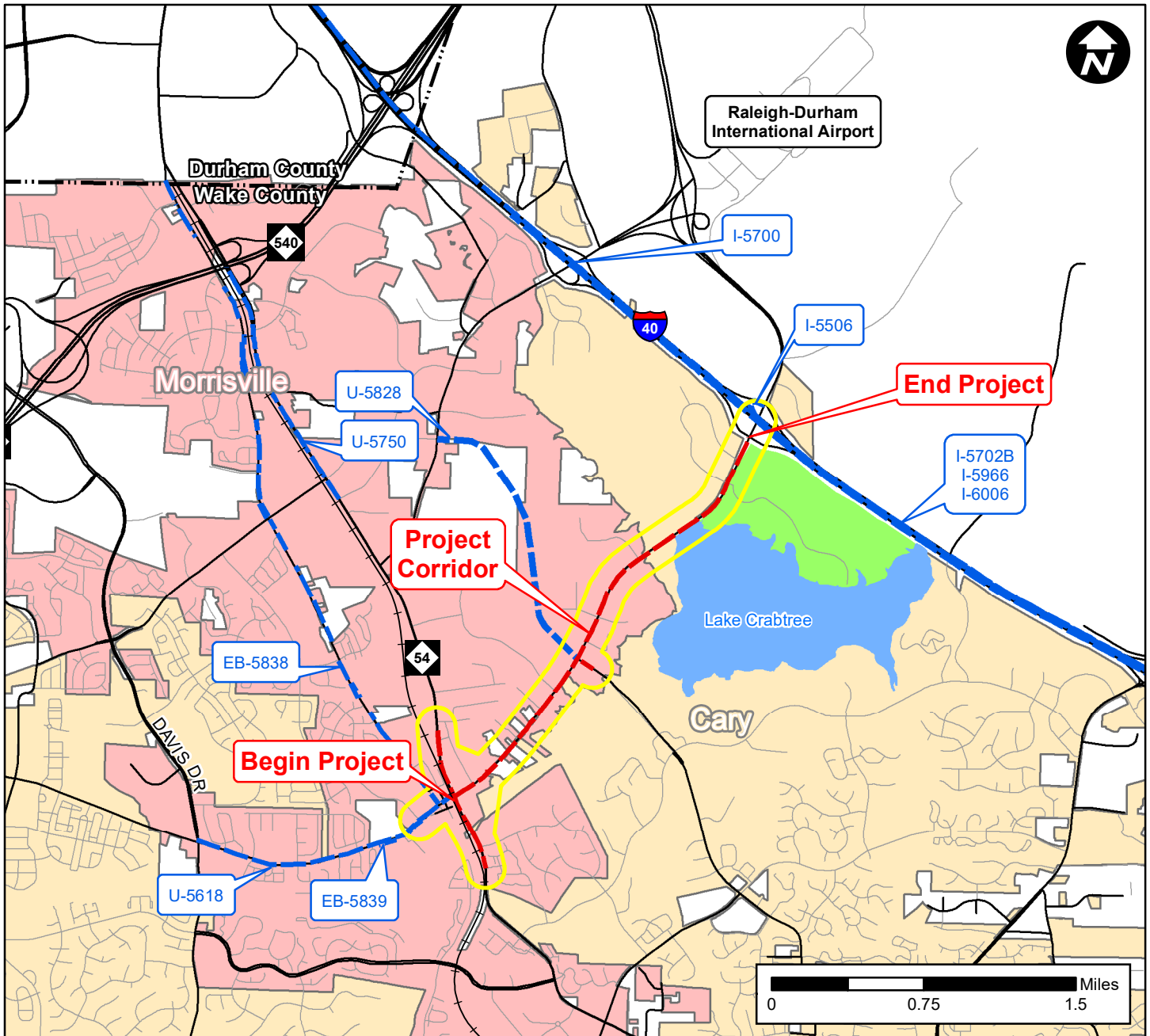
RCP – Reinforced Concrete Pipe; RCBC – Reinforced Concrete Box Culvert


C – Aquatic life, secondary recreation, fresh water; B – All Class C uses in addition to primary recreation, fresh water

NSW – Nutrient Sensitive Waters

Figures

Figure 1: Project Vicinity
Figures 2A-2G: Major Hydraulic Structures
Figure 3A-3C: Environmental Features Map





- Project Study Area
- Project Limits
- Adjacent STIP Project
- Railroad

- Lake Crabtree County Park
- Town of Cary
- Town of Morrisville

Figure 1 - Project Vicinity
 STIP No. U-5811
 SR 1002 (Aviation Parkway)
 Widening from NC 54 to I-40
 Morrisville/Cary, Wake County



Inlet looking downstream



Inlet looking upstream

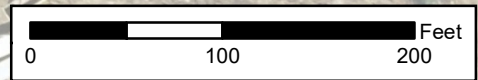


Outlet looking upstream



Outlet looking downstream

Site 1
Existing: 3-60" RCP, 60'
Proposed: 2@ 8'x8' RCBC with 2' sill (buried 1'), 160'



- Proposed Sidewalk / Multi-Use Path
- Proposed Edge of Travel
- Proposed Drainage Structure
- Delineated Stream

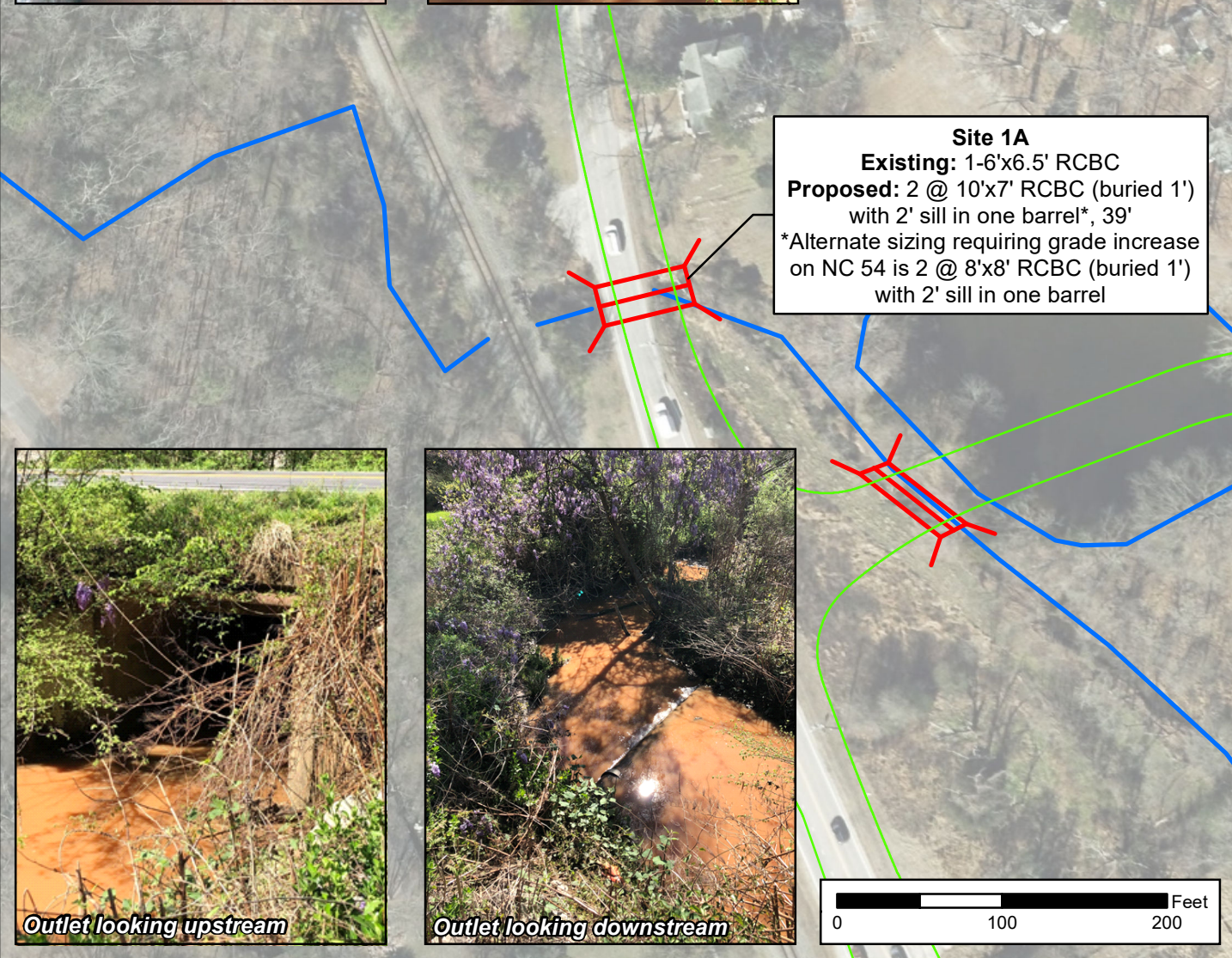
Figure 2A - Major Hydraulic Structures
 STIP No. U-5811
 SR 1002 (Aviation Parkway)
 Widening from NC 54 to I-40
 Morrisville/Cary, Wake County



Inlet looking downstream



Inlet looking upstream



Outlet looking upstream



Outlet looking downstream

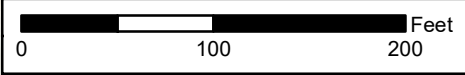


- Proposed Edge of Travel
- Proposed Drainage Structure
- Delineated Stream

Figure 2B - Major Hydraulic Structures
 STIP No. U-5811
 SR 1002 (Aviation Parkway)
 Widening from NC 54 to I-40
 Morrisville/Cary, Wake County

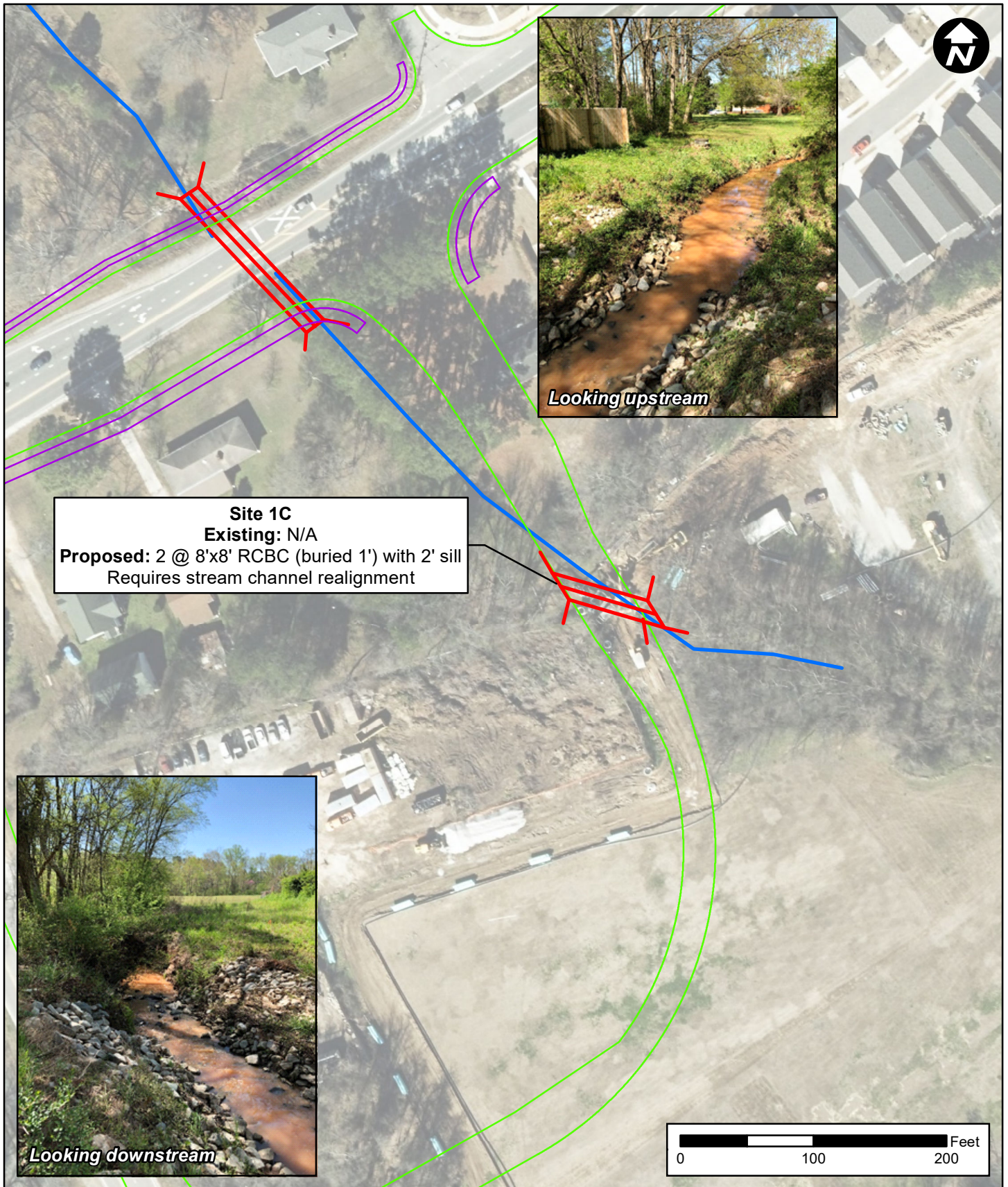


Site 1B
Existing: N/A
Proposed: 2 @ 8'x8' RCBC (buried 1')
with 2' sill in one barrel



- Proposed Edge of Travel
- Proposed Drainage Structure
- Delineated Stream

Figure 2C - Major Hydraulic Structures
 STIP No. U-5811
 SR 1002 (Aviation Parkway)
 Widening from NC 54 to I-40
 Morrisville/Cary, Wake County



- Proposed Sidewalk / Multi-Use Path
- Proposed Edge of Travel
- Proposed Drainage Structure
- Delineated Stream



Figure 2D - Major Hydraulic Structures
 STIP No. U-5811
 SR 1002 (Aviation Parkway)
 Widening from NC 54 to I-40
 Morrisville/Cary, Wake County



Site 2
Existing: 1-48" RCP, 48'
Proposed: 2 @ 72" RCPs (buried 1'), 144'



- Proposed Sidewalk / Multi-Use Path
- Proposed Edge of Travel
- Proposed Drainage Structure
- Delineated Stream

Figure 2E - Major Hydraulic Structures
 STIP No. U-5811
 SR 1002 (Aviation Parkway)
 Widening from NC 54 to I-40
 Morrisville/Cary, Wake County



Site 4
Existing: 2-72" RCP, 65'
Proposed: 2 @ 8'x7' RCBC (buried 1'), 166'



Inlet looking downstream



Inlet looking upstream



Outlet looking upstream

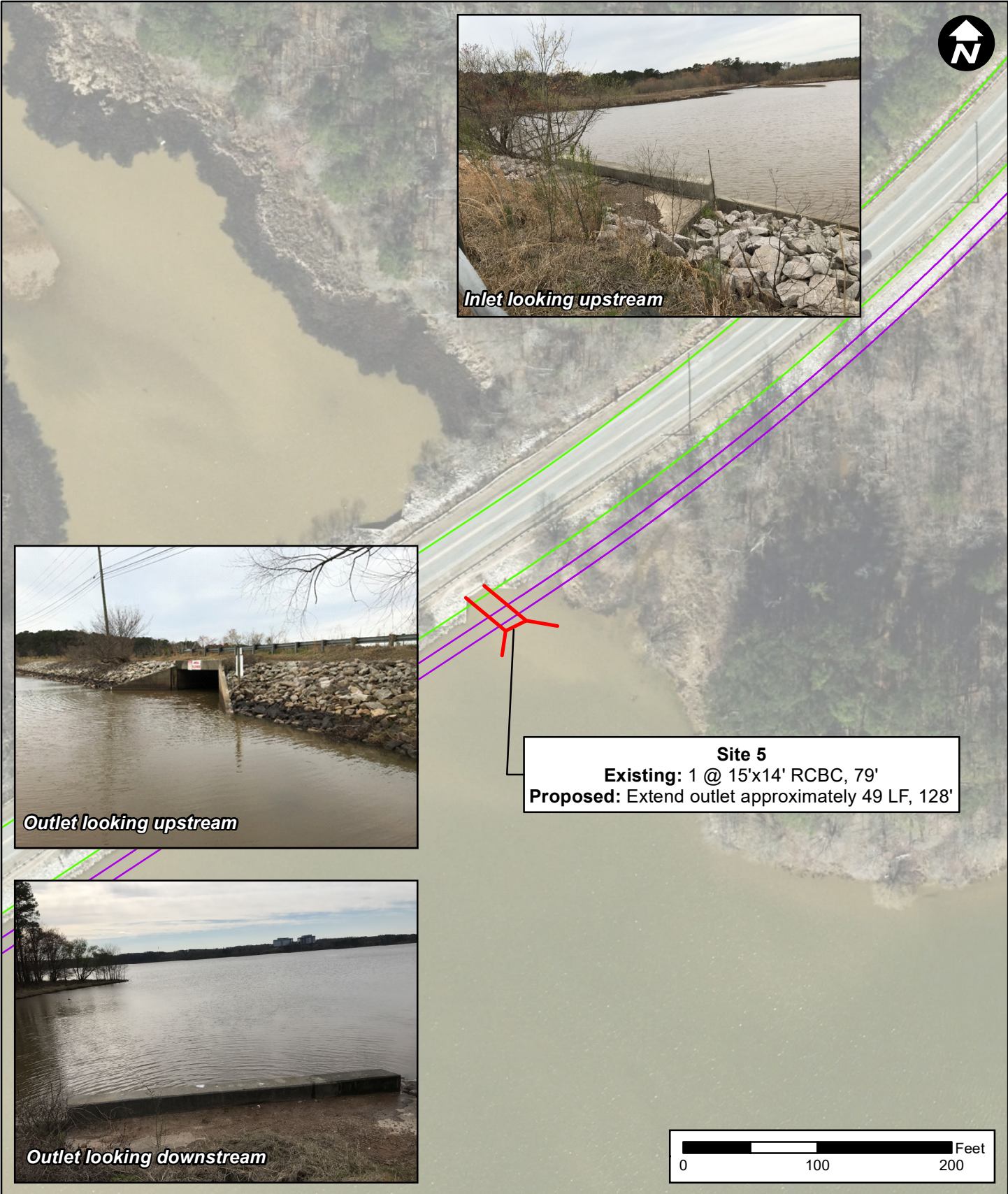


Outlet looking downstream



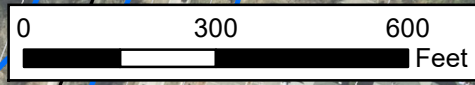
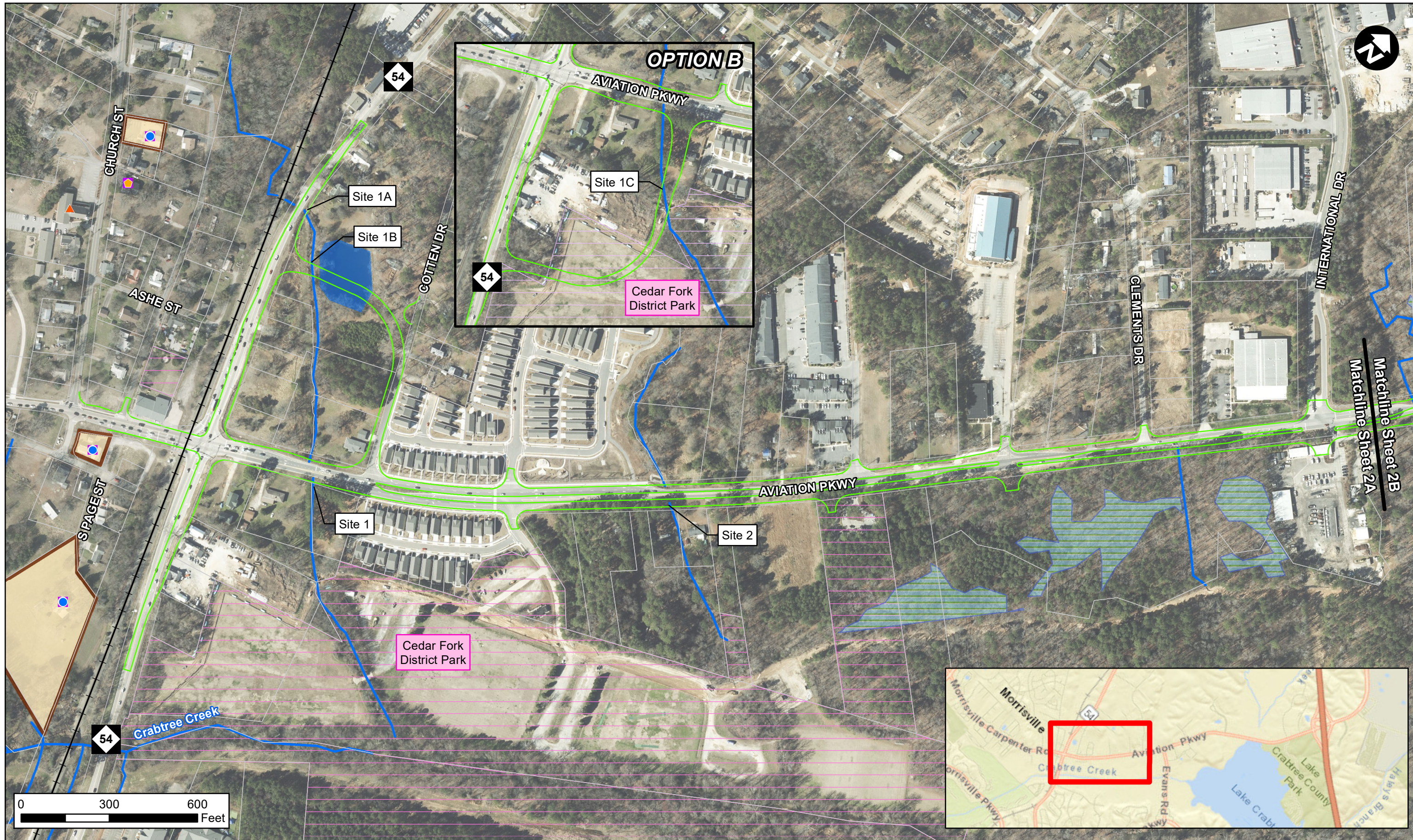
- Proposed Sidewalk / Multi-Use Path
- Proposed Edge of Travel
- Proposed Drainage Structure
- Delineated Stream

Figure 2F - Major Hydraulic Structures
 STIP No. U-5811
 SR 1002 (Aviation Parkway)
 Widening from NC 54 to I-40
 Morrisville/Cary, Wake County



- Proposed Sidewalk / Multi-Use Path
- Proposed Edge of Travel
- Proposed Drainage Structure

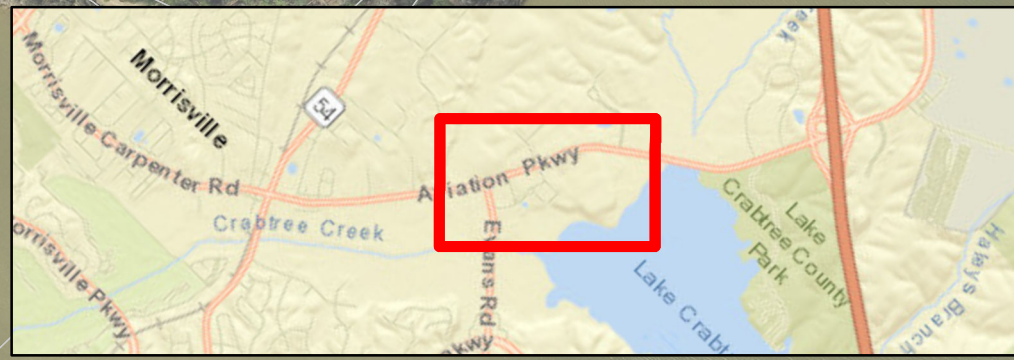
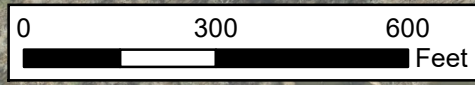
Figure 2G - Major Hydraulic Structures
 STIP No. U-5811
 SR 1002 (Aviation Parkway)
 Widening from NC 54 to I-40
 Morrisville/Cary, Wake County



	Parcel Boundary		Delineated Stream		Park		Surveyed, Local Landmark
	Proposed Edge of Travel		Delineated Wetland		National Register and Local Landmark		National Register Boundary
	Railroad		Pond/Open Water		Determined Eligible for National Register		

Aviation Parkway Widening
 From NC 54 to I-40 in Wake County

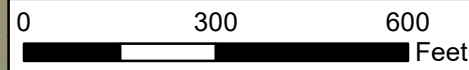
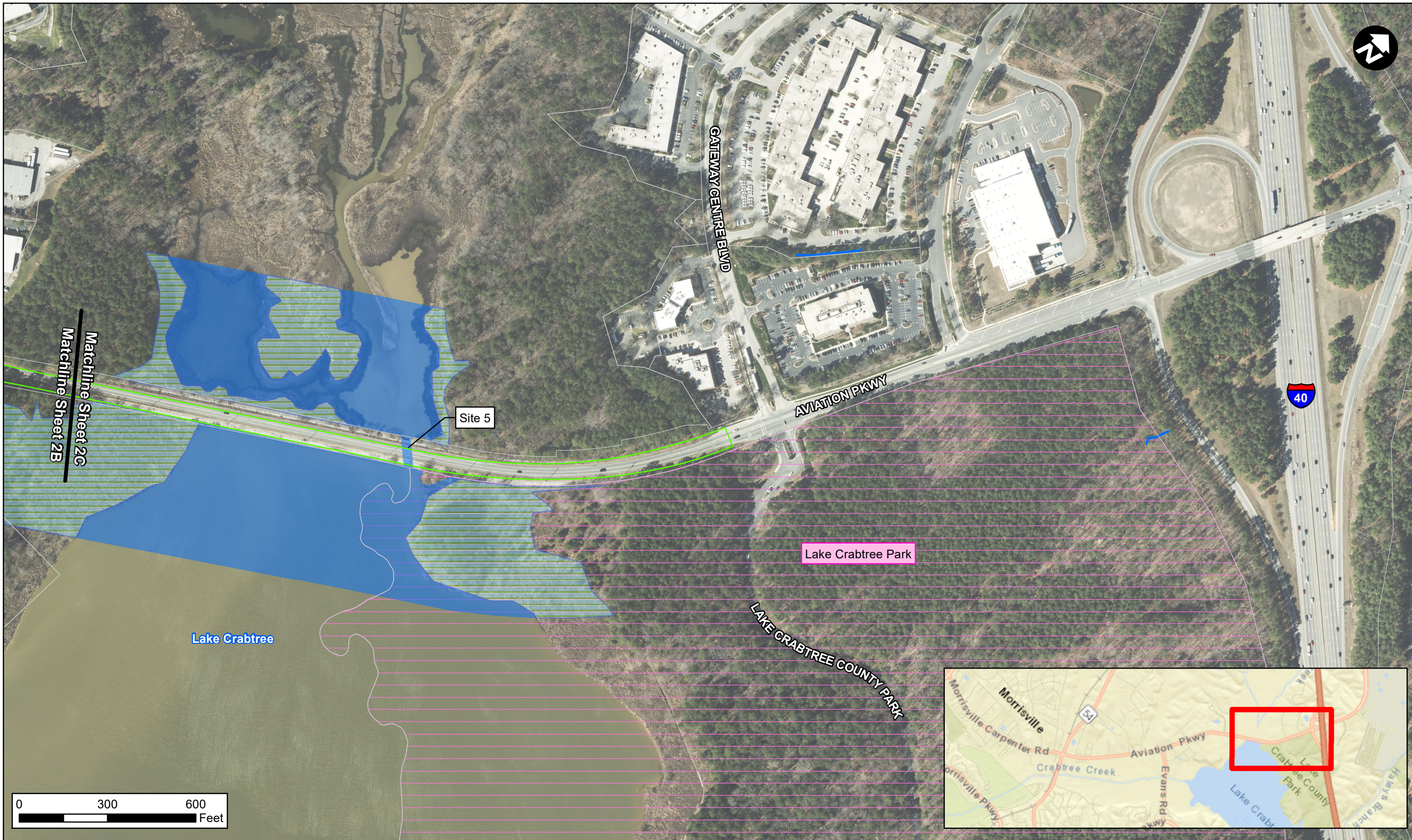
Environmental Features Map
 Figure 3A
 U-5811
 Division 5




- Parcel Boundary
- Delineated Wetland
- Proposed Edge of Travel
- Pond/Open Water
- Delineated Stream

**Aviation Parkway
Widening**
From NC 54 to I-40 in Wake County

Environmental Features Map	
Figure 3B	U-5811
Division 5	



-  Parcel Boundary
-  Delineated Wetland
-  Proposed Edge of Travel
-  Pond/Open Water
-  Delineated Stream
-  Park

**Aviation Parkway
Widening**
From NC 54 to I-40 in Wake County

Environmental Features Map

Figure 3C

U-5811
Division 5

Appendix

**Project U-5811
CP 2A Concurrence Form**

Section 404/NEPA Interagency Agreement

**Concurrence Point 2A
Bridging Decisions and Alignment Review**

Project Title: SR 1002 (Aviation Parkway), Widening from NC 54 to I-40
TIP Project No.: U-5811
WBS No.: 44384.1.1

The Project Team has concurred on this date to include the following major hydraulic structures as part of the detailed study alternatives:

- Site 1 – Remove and replace existing culvert with 2 @ 8' x 8' RCBC with 2' sill (buried 1')
- Site 1A – Remove and replace existing culvert with 2 @ 10' x 7' RCBC (buried 1') with 2' sill in one barrel OR change roadway grade and replace with 2 @ 8' x 8' RCBC (buried 1') with 2' sill in one barrel
- Site 1B – Install 2 @ 8' x 8' RCBC with 2' sill (buried 1') in one barrel
- Site 1C – Install 2 @ 8' x 8' RCBC with 2' sill (buried 1')
- Site 2 – Remove and replace existing culvert with 2 @ 72" RCPs (buried 1')
- Site 4 – Remove and replace existing culvert with 2 @ 8' x 7' RCBC (buried 1')
- Site 5 – Extend existing culvert outlet approximately 49 linear feet

Name	Agency	Date
_____	USACE	_____
_____	USEPA	_____
_____	USFWS	_____
_____	USDA - NRCS	_____
_____	NCDWR	_____
_____	NCDOT	_____
_____	NCSHPO	_____
_____	NCWRC	_____
_____	CAMPO	_____